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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/991,689	11/26/2001	Kiyoshi Fukuchi	02110050AA	3933

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RESTON, VA 20190

EXAMINER

WONG, ERIC K

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 04/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/991,689

Applicant(s)

FUKUCHI, KIYOSHI

Examiner

Eric Wong

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 12 and 16-24 is/are rejected.
- 7) ☒ Claim(s) 5-11, 13-15, 25 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 12/19/03 have been fully considered but they are not persuasive. Examiner agrees with applicant's arguments with respect to Figure 1, however it is pointed out that figure 14 is the pertinent figure used in the prior office action. Cao also discloses in his abstract, a bi-directional system that simultaneously transmits two separate signal rays in opposite forward directions. Both signals are also amplified with a gain element. Although it is noted that the prior action referred to column 3, lines 49-53, this was pointed out due to the lack of teaching in figure 14. Figure 14 depicts the system as described in the abstract and meets the structural limitations as claimed. The disclosure of the wavelength bands, although in "prior art" sets the definition of the red and blue wavelength bands used by Cao in his invention. "This type of bi-directional lightwave transmission scheme is termed band bi-directional herein". Cao goes on to further disclose the definition of other bands that may be used in his invention. Examiner apologizes for not pointing this out more clearly in the prior action.
2. Applicant's arguments with respect to the bi-directional communication in the prior art utilizing separate fibers, this is still in an optical transmission medium as claimed and therefore Cao meets the limitations of the claim as recited.
3. Applicants arguments with respect to the "phenomenon" of the device is moot because Cao meets the structural limitations of the claims as presented.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

5. Claims 1, 3-4, 16, 18-19, 21-22, and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by United States Patent Number 6,459,528 to Cao.

As to claim 1, 16, 19 and 22, Cao discloses in figure 14, an optical wavelength-multiplexing transmission system for transmitting a first wavelength (red; dotted line) and second wavelength-multiplexing light (blue; solid line) in opposite directions through an optical transmission medium allowing bi-directional wavelength-multiplexing transmission, wherein

- A wavelength band of the first wavelength-multiplexing light is set to a shorter wavelength side as compared to a wavelength band of the second wavelength-multiplexing light (red < blue, column 3, lines 49-53), Cao defines the red/blue bands in the background of the invention and this definition is relied upon in his disclosure of his invention; and
- Excitation light having a wavelength shorter than the wavelength band of the first, wavelength-multiplexing light travels through the optical transmission **medium** in a same direction as the second wavelength-multiplexing light (column 2, lines 38-41).
- Two amplifiers for amplifying light (1406)

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As to claims 3, 18, 21, and 24, the light wavelengths are at least 100nm.

As to claim 4, a first and second transceiver for input/output light is used (904, 902).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 2, 17, 20 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cao as applied to claims 1, 16, 19 and 22 above.

Cao discloses wavelengths of excitation light shorter than multiplexing light, but fails to explicitly disclose the wavelength by determining the Raman scattering characteristics of the transmission medium.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to determine the wavelength depending on the Raman scattering characteristic of the transmission medium since it was known in the art that Raman amplification characteristics can reduce power loss of an optical signal (Paragraph 13, Applicant's disclosure of prior art).

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cao as applied to claim 1 above.

Cao discloses the use of wavelength multiplexing light in the range centered near a wavelength of 1550nm. It would have been obvious to one having ordinary skill in the art at the

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time the invention was made to have a range for the first wavelength multiplexing light between 1480nm to 1520nm and the second wavelength multiplexing light in a range between 1580nm to 1620nm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum range or workable ranges involves only routine skill in the art.

Claim Objections

9. Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art made of record fails to explicitly disclose a repeater provided between two transceivers comprising an excitation light injector.

10. Claims 6 and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art made of record fails to explicitly disclose a second end device comprising a third and fourth transceiver for injecting light.

11. Claims 8-11, 13-15, and 25-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art made of record fails to explicitly disclose a third wavelength multiplexing light.

Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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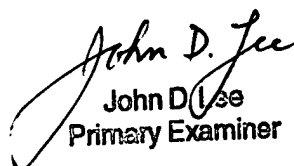
MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Wong whose telephone number is 571-272-2363. The examiner can normally be reached on Monday through Friday, 830AM - 430PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on 571-272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EW


John D. Lee
Primary Examiner